Vermont Mental Health Performance Indicator Project

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MEMORANDUM

TO: Vermont Mental Health Performance Indicator Project
Advisory Group and Interested Parties

FROM: John Pandiani
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DATE: May 31, 2002

RE: Trouble with the law after managed care and after September 11, 2001

The attached is the handout from a PIP presentation at the Annual National Conference on Mental Health Statistics earlier this week. The presentation explored the impact of societal and service system factors on the relative rate at which consumers of mental health services get into trouble with the law. The service system factor examined was the change of CRT system management to a managed care model in July 1999. The societal factor examined was the events of September 11, 2001.

Criminal justice involvement was measured using elevated risk (relative to the general population of Vermont) of arrest and of being charged with a crime. Interrupted time series analysis of monthly rates of criminal justice involvement was used to measure change over time.

As you will see, the elevated risk of arrest increased at a statistically significant rate for September 11 but not for managed care. No significant change in elevated risk of being charged with a crime was found for either event. Elevated risk of arrest was greater than the elevated risk of being charged with a crime in both analyses. Women had substantially greater elevated risk than men for both measures of criminal justice involvement and for every time period examined.

As always, we welcome your comments and questions to pip@ddmhs.state.vt.us or 802-241-2638.

The Impact of

Managed Care and September 11, 2001

on Criminal Justice Involvement

for Young Adults with Severe and Persistent Mental Illness

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ABSTRACT

This project compared the elevated risk of criminal justice involvement for young adult clients of community programs for severe and persistent mental illness in the state of Vermont in relation to two potentially significant events. The first event was the change to a managed care model of service delivery. The second was the events of September 11, 2001. Criminal justice involvement was measured using elevated risk of arrest and elevated risk of being charged with a crime. Elevated risk was measured on a month-by-month basis using administrative databases from mental health and criminal justice agencies. Because these data sets do not share unique person identifiers, Probabilistic Population Estimation was used to measure the number of people represented in both data sets. Interrupted time series analysis of monthly rates of criminal justice involvement was used to measure change over time.

Results indicate that elevated risk of arrest increased at a statistically significant rate for September 11 but not for managed care. No significant change in elevated risk of being charged with a crime was found for either time period. Elevated risk of arrest was greater than the elevated risk of being charged with a crime in both analyses. Women had substantially greater elevated risk than men for both measures of criminal justice involvement and for every time period examined.

Presented at the
Annual National Conference on Mental Health Statistics
May 28 – May 31, 2002. Renaissance Mayflower Hotel, Washington, D.C.

This project was supported, in part, by a Center for Mental Health Services Sixteen State Indicator Pilot Project Grant #5HR1SM52625-03. This report reflects the views and opinions of the authors. It does not necessarily reflect the official position or policy of CMHS, SAMHSA, or HHS.

Mental health services research most often focuses on the impact of clinical interventions and client characteristics on treatment outcomes. Less often, mental health services research examines the impact of service system characteristics such as financing mechanisms and cross service sector caseload integration. Mental health services research rarely explores the impact of larger social and cultural changes on treatment outcomes. This presentation examines the impact of one service system change and one larger social/cultural event on long-term trends in criminal justice involvement for young adults receiving treatment for severe and persistent mental illness in the State of Vermont. This analysis focuses on young adults because criminal justice involvement is more common in this age group.

The service system change that was examined is the change to a managed care model for administering community programs for adults with severe and persistent mental illness. Two hypotheses regarding the impact of managed care on criminal justice involvement for mental health consumers can be derived from the health care reform debate of the 1990s. One hypothesis, can be derived from concerns that cost shifting by managed care entities would result in "…transferring responsibilities from mental health services to criminal justice systems" (Mechanic, 1996). This hypothesis would predict increased criminal justice involvement. A second hypothesis, based on the hope that managed care would provide "a comprehensive array of services… based on individual necessity… [that] produces better outcomes… (Bureau of National Affairs, 1993) would support a hypothesis of decreased criminal justice involvement under managed care.

The larger social/cultural event is the attacks on the World Trade Center in New York City and the Pentagon in Washington D.C. on September 11, 2001. Following September 11, there was widespread concern that these events had "triggered psychotic behavior in vulnerable populations, including adults with serious mental illnesses" (VA DMHMRSAS, 2001). This observation would support a hypothesis of increased criminal justice involvement. Increased levels of vigilance and intervention by police agencies would further support this hypothesis.

Method

Levels of criminal justice involvement of people with severe and persistent mental illness have been monitored, on a monthly basis, by Vermont's Mental Health Performance Indicator Project since the implementation of managed care in July 1999. Because existing administrative databases were used in this analysis, it has also been possible to extend this series of observations to include the years preceding the implementation of managed care. In order to test for impacts of managed care and/or the events of September 11 on levels of criminal justice involvement, interrupted time series analysis was used to compare levels and trends in criminal justice involvement prior to and after each of these events.

The data used in this analysis were drawn from three sources. Information on people served by community programs for adults with severe and persistent mental illness were obtained from the monthly service report database maintained by the state mental health authority. For purposes of this analysis, records for all young adult "active cases" for each month during the period under examination were selected from the larger database. Active cases include individuals who were served during the month under examination or the previous two months. Information obtained from the database included the date of birth and gender of each person and the region of the state in which they were served.

This analysis examined two levels of criminal justice involvement: arrests and criminal charges. Information on people arrested in Vermont was obtained from the Vermont State Police database. Information on people charged with a crime in Vermont was obtained from the Vermont District Court database. In both cases the information obtained included the date of birth and gender of the person involved, and the type, date, and location of criminal justice involvement.

Because these data sets do not share unique person identifiers, Probabilistic Population Estimation was used to determine the number of people represented in the mental health data set who were also represented in the criminal justice data sets (Banks and Pandiani, 2001).

Probabilistic Population Estimation is a statistical procedure that provides valid and reliable measures of the size and overlap of data sets that do not include unique person identifiers. These estimates are based on a comparison of the distribution of dates of birth in the data sets to the known distribution of dates of birth in the general population. This approach is particularly useful where concerns about the confidentiality of medical records limit the use of personally identifying information (Pandiani, Banks, and Schacht, 1998). A technical description of the procedure is provided at the end of this handout.

This analysis provided numbers of people on the mental health caseload each month, and the number of these people who had criminal justice involvement each month, overall and for age and gender groups. These were combined to provide rates of criminal justice involvement for service recipients. This analysis also provided the total number of Vermont residents who had criminal justice involvement each month. In conjunction with population estimates, these provided rates of criminal justice involvement for residents of the state. Finally, a measure of elevated risk of criminal justice involvement for recipients of mental health services was obtained by dividing the rate of criminal justice involvement for service recipients by the rate for the general population. The elevated risk for each month during the study period was entered into a longitudinal database for further analysis.

Interrupted time series analysis was used to measure change in the levels and trends in criminal justice involvement that occurred when managed care began and when the September 11 attacks occurred. Interrupted time series analysis is sensitive to long-term trends in the data as well as to changes that occur at the time of the intervention. This procedure provided information on the direction and the statistical significance of changes in the time series that occurred before the intervention, at the time of the intervention, and after the intervention.

Results

Results indicate that change in elevated risk of arrest is significant for the events of September 11 but not for the change to managed care (Figure 1). Elevated risk of arrest tended to be greater than elevated risk of being charged with a crime. Women had substantially greater elevated risk than men for both measures of criminal justice involvement and for every time period examined.

Managed Care

In order to determine the impact of managed care on criminal justice involvement, elevated risk of criminal justice involvement was measured for two periods of time. The pre-managed care period included the 26 months from February 1998 to June 1999. The post-managed care included the 17 months from July 1999 to August 2001.

Young adults served by programs for adults with severe and persistent mental illness in Vermont were substantially more likely than members of the general population to be arrested during the period under examination. This elevated risk of arrest was decreasing at a statistically significant rate before managed care was implemented. With the implementation of managed care, the elevated risk increased but the difference was not statistically significant. During the managed care era, clients' elevated risk of arrest did not change at a statistically significant rate. This pattern was evident for both male and female clients. Young adult clients were also more likely than members of the general population to be charged with a crime during the period under examination. This elevated risk of being charged with a crime did not change before managed care was implemented, did not change when managed care was implemented, and did not change during the managed care era.

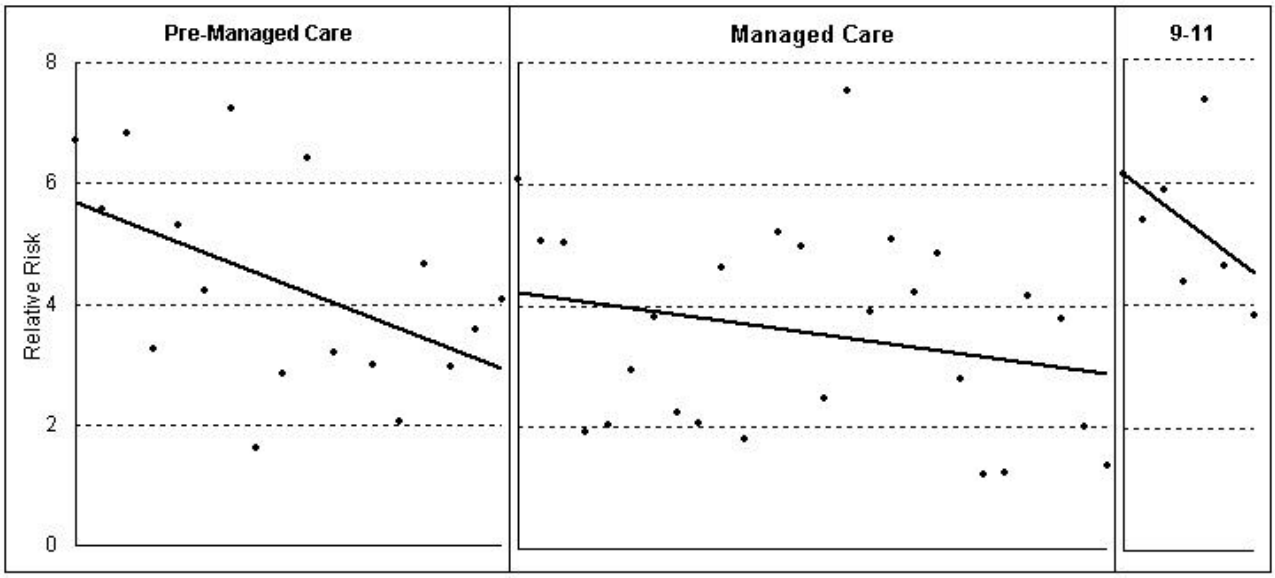
Figure 1

Elevated Risk of Criminal Justice Involvement

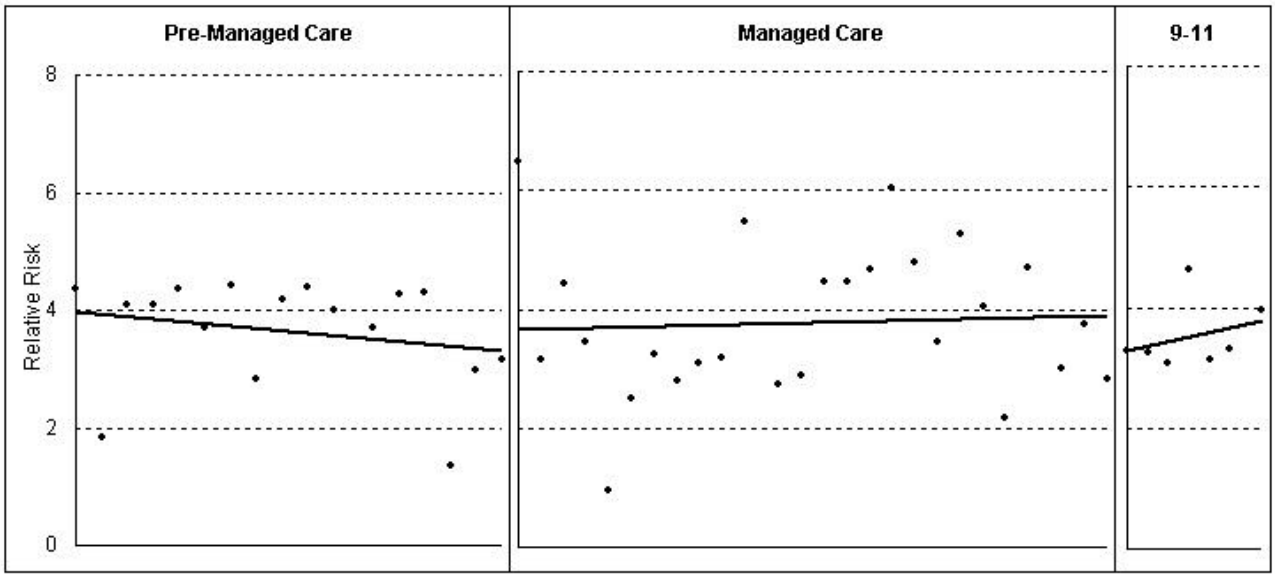
for Young Adult Clients of Community Rehabilitation and Treatment Programs

Vermont: February 1998 - March 2002

Elevated Risk of Arrest



Elevated Risk of being Charged with a Crime



Elevated risk of criminal justice involvement is measured on a month-by-month basis using administrative databases from mental health and criminal justice agencies. These databases do not share personally identifying information. For this reason, Probabilistic Population Estimation was used to determine the number of people shared across data sets. Interrupted time series analysis of monthly rates of criminal justice involvement was used to measure change over time.

The Pre-Managed Care period includes February 1998 through June 1999. The Managed Care period includes July 1999 through August 2001. The post September 11 period includes September 2001 through March 2002.

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September 11

In order to determine the impact of the events of September 11, 2001 on criminal justice involvement, elevated risk of criminal justice involvement was measured for two periods of time. The pre-September 11 period, for purposes of this analysis, included the 17 months from July 1999 to August 2001. The post-September 11 period included the 7 months from September 2001 to March 2002.

Young adults served by programs for adults with severe and persistent mental illness in Vermont were substantially more likely than members of the general population to be arrested during the period under examination. This elevated risk of arrest was not changing at a statistically significant rate before September 2001. During September 2001, the elevated risk increased substantially and significantly. Since September 2001, clients' elevated risk of arrest declined but not at a statistically significant rate.

Young adults served by programs for adults with severe and persistent mental illness in Vermont were also substantially more likely than members of the general population to be charged with a crime during the period under examination. This elevated risk of being charged with a crime was not changing before September 2001. During September 2001, the elevated risk decreased slightly (but not significantly). Since September 2001, clients' elevated risk of being charged with a crime has not changed at a statistically significant rate.

Gender and Elevated risk

Young women had substantially greater elevated risk than young men of criminal justice involvement. Young women in treatment were 9.1 times as likely to be arrested as young women in the general population and 6.3 times as likely to be charged with a crime as young women in the general population. Young men in treatment were 2.6 times as likely to be arrested as young men in the general population and 2.8 times as likely to be charged with a crime as young men in the general population.

Discussion

Mental health services research has a distinct clinical bias. The impact on treatment outcomes of factors and events that are external to the clinical process are rarely examined. This presentation has examined the impact of two factors external to the clinical process on levels of criminal justice involvement, an important treatment outcome for adults with severe and persistent mental illness. This research found a significant relationship between the events of September 11, 2002 and the elevated risk of arrest of young adult consumers of mental health services (compared to members of the general population in the same age group). This finding raises important questions about the relationship between warfare, domestic security, and levels of criminal justice involvement of people with severe and persistent mental illness. These questions suggest the need for further research that relates to the geographical distribution of such relationships, their duration, and their underlying mechanisms.

Future research should be designed to determine if a similar increase in elevated risk of arrest occurred in other parts of the United States? If so, was the increase related to physical proximity to the attacks? Was the impact greater in New York City and Washington, DC than in Vermont, for instance? Was the impact greater in urban areas, regardless of region of the country, or was it felt equally in urban and rural areas?

This research suggests a tendency for elevated risk of arrest to decrease as time passed after September 11. Future research should be designed to determine if the elevated risk observed here will prove to be a short-term phenomenon? Preparations should also be made to conduct research to determine if the elevated risk that was observed here will reappear if similar events occur in the future?

Finally, future research should explore the underlying causes of the elevated risk that was observed here. Arrest is a function of the interaction of a citizen and a police officer. Elevated risk

of arrest after September 11 could be the result of stress-induced acting out by service recipients. It could also be the result of less police tolerance of unusual behavior. The relative contribution of citizen behavior and police response is an important issue for future research. It is also important to consider that elevated risk is a function of two arrest rates: arrest rates for the general population and arrest rates for mentally ill adults. Future research should be designed to determine if the observed elevated risk was a function of increased arrests of mentally ill adults, decreased arrests of members of the general population, or another combination of changes.

This research also found that service recipients have consistently greater risk of getting into trouble with the law, regardless of the measure of criminal justice involvement or time period. This elevated risk is consistently and substantially greater for young women than for young men. This increased elevated risk of getting into trouble with the law for women in mental health treatment has been noted, and two interpretations of this difference have been suggested elsewhere (Pandiani, et. al., 2000). One interpretation focuses on citizen behavior, the other focuses on the behavior of the police. A person/behavior focused interpretation would look to more elevated rule breaking behavior associated with mental illness for women than for men. A police/response focused interpretation would focus on variation in relative tolerance of rule breaking behavior for women with mental illness (as compared to women in the general population) and the relative tolerance of rule breaking behavior for men with mental illness (as compared to men in the general population). Research designed to address these issues could help to understand, and perhaps reduce, the elevated risk of criminal justice involvement for adults with severe and persistent mental illness.

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Related Readings

Approaches to Risk Adjusting Outcome Measures Applied to Criminal Justice Involvement after Community Service. *Journal of Behavioral Health Services and Research*. 2001 Vol. 28 #3 (Banks, Pandiani, & Bramley)

Bed Closures and Incarceration Among Users of VA Behavioral Health Services in Upstate New York. *Mental Health Services and Research*, October 2000 (Rosenheck, Banks, Pandiani, & Hoff)

Consumer Satisfaction and Treatment Outcomes: Dissatisfaction with Mental Health Services and Incarceration after Treatment. *Administration and Policies in Mental Health*, 2001, Vol. 29, #2. (Pandiani, Schacht, & Banks)

Utilization of Local Jails and General Hospitals by State Psychiatric Center Patients. *The Journal of Behavioral Health Services and Research*, November 2000 (Banks, Stone, Pandiani, Cox, & Morchauser)

Using Incarceration Rates to Measure Mental Health Program Performance. *Journal of Behavioral Health Services and Research*, August 1999. (Pandiani, Banks, & Schacht)

METHDOLOGICAL NOTE

PROBABILISTIC POPULATION ESTIMATION

Probabilistic Population Estimation is a statistical procedure that determines the number of people (with known confidence intervals) who are represented in data sets that do not contain unique person identifiers. Probabilistic Population Estimation uses information on the distribution of birth dates in a data set to determine the number of people represented in the data set. The number of people necessary to produce the number of birthdays observed in a single birth year cohort, for instance, would be calculated using the following formula:

$$P_j(l_j) = \sum_{i=1}^{l} \frac{365}{365 - i}$$

where "P_j" is the number of people and "i" is the number of birth dates observed. Similar logic is used to determine the number of people who appear in more than one data set. The table below provides illustrative results of Probabilistic Population Estimation for populations of specified size.

Population Estimates for Specified Numbers of Birth Dates Within a Year

Birth Dates	Number of People	Birth Dates	Number of People
1	1.003 ± .103	180	249 ± 20
10	10.15 ± .776	250	423 ± 38
20	20.6 ± 1.54	300	632 ± 64
50	54. ± 4	330	860 ± 101
100	117. ± 9	360	1630 ± 325

POPULATION OVERLAP

In order to probabilistically determine the number of people shared across data sets that do not include a common person identifier, the sizes of three populations are determined and the results are compared. The number of people in each of the original data sets are the first two populations. The number of people in a data set that is formed by combining the two original data sets is the third data set.

The number of people who are shared by the two data sets is the difference between the sum of the numbers of people represented in the two original data sets and the number of people represented in the combined data set. This occurs because the sum of the number of people represented in the two original data sets includes a double count of every person who is represented in both data sets. The number of people represented in the combined data set does not include this duplication. The difference between these two numbers is the size of the duplication between the two original data sets, the size of the caseload overlap. In terms of mathematical set theory, the intersection of two sets is the difference between the sum of the sizes of the two sets (A+B) and the union of the two sets ($A \cup B$):

$$(A \cap B) = (A + B) - (A \cup B).$$